

CLAIMS

What is claimed is:

- Sub A1*
1. A method, comprising controlling utilization of a router resource at the interface between a first number of local area network (LAN) ports and a second number of wide area networks (WAN) links by each LAN port according to bandwidth availability of corresponding bundles of the WAN links assigned to each of the LAN ports and a switching capacity of the router resource.
 2. The method of claim 1 wherein individual ones of the LAN ports are permitted to exceed their fair share of the switching capacity of the router resource if a current switching load due to traffic from all of the LAN ports is less than a maximum switching capacity for the router resource.
 3. The method of claim 1 wherein if a current switching load due to traffic from all of the LAN ports is equal to a maximum switching capacity of the router resource then those of the LAN ports that are attempting to utilize more than their fair share of the bandwidth availability or the switching capacity are throttled back.
 4. The method of claim 3 wherein throttling back a LAN port comprises dropping packets inbound on that port at the packets' entry point to the router resource.
 5. A method, comprising determining, at an entry port of a router resource, whether or not to admit inbound traffic according to a fair allocation distribution scheme that allows traffic to be admitted according to bandwidth availability of a corresponding exit point for the traffic and a current utilization of total switching capacity of the router resource.

- 1 6. The method of claim 5 wherein the fair allocation scheme allows, traffic to be admitted so
2 long as the bandwidth availability of the corresponding exit point exists.
- 1 7. The method of claim 5 wherein the fair allocation scheme allows traffic to be admitted
2 even if a port of the router resource associated with that traffic is exceeding an allocated
3 amount of the total switching capacity of the router resource so long as the total switching
4 capacity of the router resource has not been attained.
- 1 8. The method of claim 7 wherein the fair allocation scheme allows traffic to be admitted so
2 long as the bandwidth availability of the corresponding exit point exists.
- 1 9. A routing resource configured to provide fair allocation of switching capacity among a
2 number of input ports thereof according to output bandwidth capacity of output links
3 associated with the input ports and total switching capacity utilization of the routing
4 resource.
- 1 10. The routing resource of claim 9 wherein the fair allocation is maintained by throttling
2 back those input ports which attempt to exceed the output bandwidth capacity of their
3 associated output links or which attempt to utilize more than their allocated share operating
4 at the total switching capacity.
- 1 11. The routing resource of claim 10 wherein throttling back comprises dropping packets at
2 an ingress point of the routing resource.
- 1 12. A router configured to communicatively couple a first number of local area network
2 (LAN) ports with a second number of wide area network (WAN) links according to

3 bandwidth availability of bundles of the WAN links assigned to each of the LAN ports
4 and a switching capacity of the router.

1 13. The router of claim 12 wherein the router if further configured to permit individual
2 ones of the LAN ports to exceed their fair share of the switching capacity of a current
3 switching load due to traffic from all of the LAN ports is less than a maximum switching
4 capacity of the router.

1 14. The router of claim 12 wherein the router is further configured to throttle back those
2 of the LAN ports exceeding their fair share of the switching capacity when a total
3 switching load due to traffic from all of the LAN ports is equal to a maximum switching
4 capacity of the router.

1 15. The router of claim 14 wherein throttling back a LAN port comprises dropping one
2 or more packets.

1 16. Computer-readable instructions configured to permit a router resource to determine
2 at an entry point thereof, whether or not to admit inbound traffic according to a fair
3 allocation distribution scheme that allows traffic to be admitted according to bandwidth
4 availability of a corresponding exit point for the traffic and a current utilization of total
5 switching capacity of the router resource.

1 17. The computer-readable instructions of claim 16 wherein the fair allocation scheme
2 allows traffic to be admitted so long as the bandwidth availability of the corresponding
3 exit point exists.

- 1 18. The computer-readable instructions of claim 16 wherein the fair allocation scheme
2 allows traffic to be admitted even if a port of the router resource associated with that
3 traffic is exceeding an allocated amount of the total switching capacity of the router
4 resource so long as the total switching capacity of the router resource has not been
5 attained.
- 1 19. The computer-readable instructions of claim 18 wherein the fair allocation scheme
2 allows traffic to be admitted so long as the bandwidth availability of the corresponding
3 exit point exists.
- 1 20. The computer-readable instructions of claim 16 wherein the fair allocation is
2 maintained by throttling back those input ports which attempt to exceed the output
3 bandwidth capacity of their associated output links or which attempt to utilize more than
4 their allocated share operating at the total switching capacity.
- 1 21. The computer-readable instructions of claim 20 wherein throttling back comprises
2 dropping packets at an ingress point of the routing resource.
- 1 22. The computer-readable instructions of claim 16 as embodied on a computer-readable
2 medium.
- 1 23. The computer-readable instructions of claim 16 as embodied in electronic signals
2 transported through a communication medium.